Instructors and participants interact with the nursing students providing care from a remote control room. Photo by Adam Warner.

PROJECT PROFILE

CURRAN HALL, CELTIC SIMULATION CENTER FOR INNOVATIVE LEARNING

Facility Support Services (FSS) completed a small but intense renovation of Curran Hall's third and fourth floors for Carlow University in the summer of 2018. The $1.2 million renovation is part of a strategic plan to match Carlow's facilities with the programs that will lead the university into the future.

"The impetus behind the project was the growing number of students in our College of Health and Wellness," says David Meadows, senior vice president for finance and administration. "Carlow is one of the preeminent institutions in our region for the health sciences. We have some of the best nursing, respiratory care, and nurse practitioner programs in Western Pennsylvania. As you can imagine, those programs need continued investment in the facilities for those students to simulate the experiences they will have in hospitals and patient situations.

"We felt that we needed to increase the size of our simulation space. We wanted to add about 2,000 square feet of space to our current 2,000 square foot space. We also wanted to renovate the current labs."

"The program involved taking a high-fidelity nursing simulation lab program that they have at Carlow and expanding and upgrading all the technologies involved," says Melanie Como Harris, associate and project manager for IKM Inc., the architect for the project. "Sim labs are very high intensity, tech-driven facilities. There are students working in one room and faculty in another room guiding the procedures. A robot patient lays in the bed, talking and reacting much like a human patient does."

The administrators of the simulations are in a control room across the hall from the simulation rooms. There are several cameras in each of the simulation rooms and the administrators can run three separate simulations at the same time. The instructor speaks to the student through a microphone in the robot as though they are the patient and nursing students are expected to respond to the instructor's comments with treatment. Within the simulation lab, there are patient beds that are outfitted with headwalls, beds, and fixtures that approximate what a nurse will encounter in a live clinical setting. Carlow felt that its simulation labs needed to be updated, in addition to adding more beds. That included making changes to the lobby areas outside the simulation labs.

Harris says that Carlow's health and wellness program leadership was intimately involved in the design of the lobby. She says that they labored over choosing the words applied to a backlit panel

Students simulate nursing situations with robotic mannequins while instructors and fellow students observe on monitors above the beds. Photo by Adam Warner.

that represented the values of the university and department. When given the full spectrum of options from IKM's color palette suggestions, Carlow went immediately to bold saturated colors.

"It's unusual to have a client that is so open to bold saturated colors," Harris says. "Carlow's health and wellness program is very forward thinking. The lobby is part of the stimulation. When we talk to the students, they said that the scariest thing was starting clinical rounds in a hospital. That is when they put a needle in an actual patient. They said as much simulation time they can spend before their actual clinical experience gives them comfort that they're doing things correctly. They gain the confidence that they can then move into a real-world setting."

The university received bids and conducted interviews with the prospective contractors for the Curran Hall renovation. Meadows says that FSS distinguished themselves during the interview process, allaying Carlow's major concerns about the project.

"We were extremely impressed during the interview stages and some of the early bidding with the thought process and methodology that Facility Support was going to bring to the project, particularly because we were taking an entire floor of a 50-year-old academic building and turning it into a high-fidelity simulation space," Meadows says. "We really liked their thoughts on how they would integrate the renovation portion of the project with the new space. We wanted the finished product to be so that a student or parents with a prospective student wouldn't know which was the new space and which was the renovated space."

"We felt that FSS came with a great deal of insight into that and some unique thinking as to how they wanted to work the tight schedule," he continues.

"We asked them about how they approach their semesters and came up with the idea that the two floors could be staggered," explains Brian Palmiere, project manager for FSS. "There is usually a period of a few weeks where there is the introduction of the syllabus and some teaching before getting into the simulation. We knew that we had to get their classroom settings

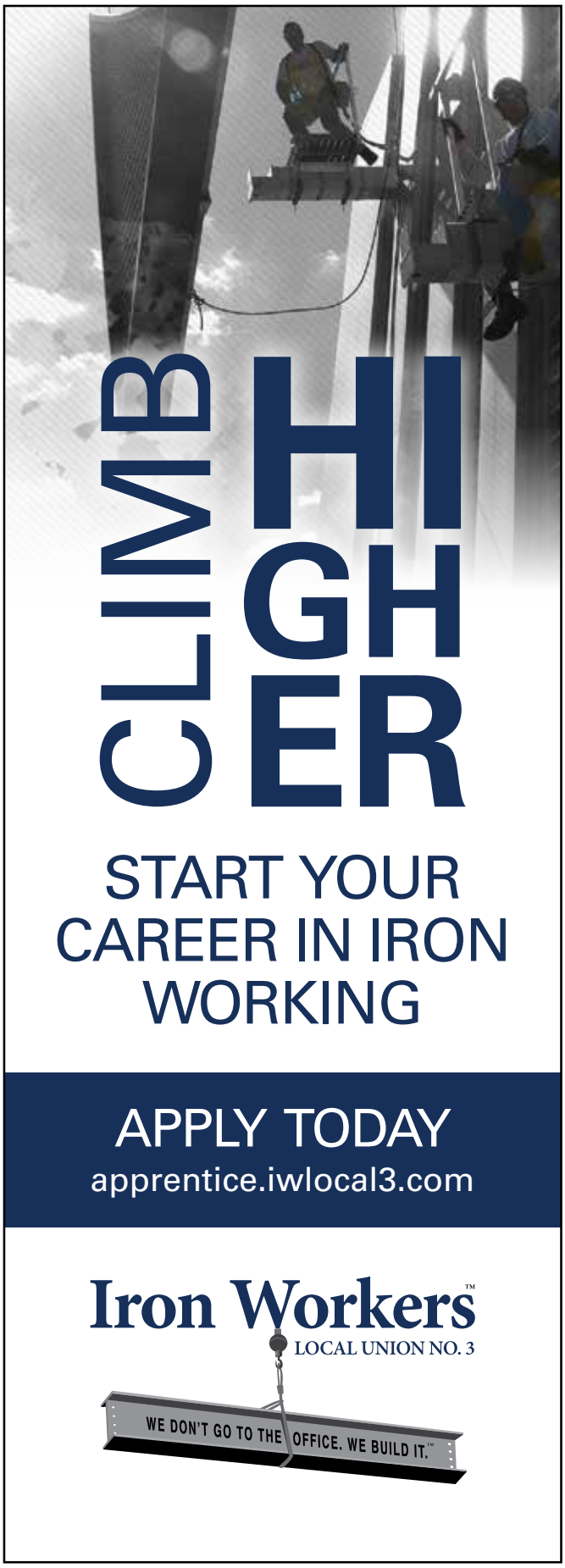


Photo by Adam Warner.

done as soon as possible so we worked hard at that. They were set up so they could open their doors when students returned for the regular classes. Meanwhile we were able to finish up the trim work and fittings upstairs along with some of the longer lead time items like the bed frames and case work."

FSS had the full summer break, but only the summer break, to complete work on the classroom piece of 4,000 square foot total scope. Work on the simulation space had to be far enough along that it could be completed by mid-September. One of the challenges of the project was that Carlow has some classes during summer break. Located on Fifth Avenue, Curran Hall offered little or no area for staging and no special access or conveyance for materials. FSS did not exactly have the run of the place.

"The big thing was to make sure that we weren't hindering Carlow's operations or the students' day-to-day experience. It was a construction job so I'm sure there was some disruption, but we did what we could to make things be seamless," Palmiere says. "We had a great superintendent, Brice Baker, on site. He worked with the staff to make sure that they were OK with how things were operating, to see if they had any questions or concerns. He was always sure to be very quick about addressing those."

Curran Hall was built in the 1960s but had not been renovated. Information was not readily available, which made the team a bit anxious about what they didn't know about the building. The first surprise took little time to uncover.

"One big problem we ran into right away was during asbestos abatement. As soon as we took the ceiling down, we found that the fireproofing had been sprayed into the metal lath on the deck above. The asbestos fireproofing was integrated into

that lath. It was going to be very difficult to remove that without compromising the floor above," recalls Palmiere.

"The existing drawings weren't all that informative about what was going on above the ceilings. A lot of the spaces we were dealing with had not been remodeled since the building was built in the 1960s," says Harris. "The very interesting construction technique that none of us on the team had ever seen before - and I have a historic preservation background - was they had taken wire mesh and used that as the form work for the concrete slab. Some of the concrete had poured through the mesh and created a very irregular surface that the fireproofing adhered to very well."

Palmiere and the asbestos abatement contractor collaborated with IKM to mitigate the problem. FSS suggested a way to hang the ceiling that did not require screwing into the underside of the slab. They developed a secondary support system underneath the slab, so they did not have to penetrate the floor above as frequently. There were still plenty of floor penetrations necessary, however, as plumbing, ductwork or electrical distribution occurred.

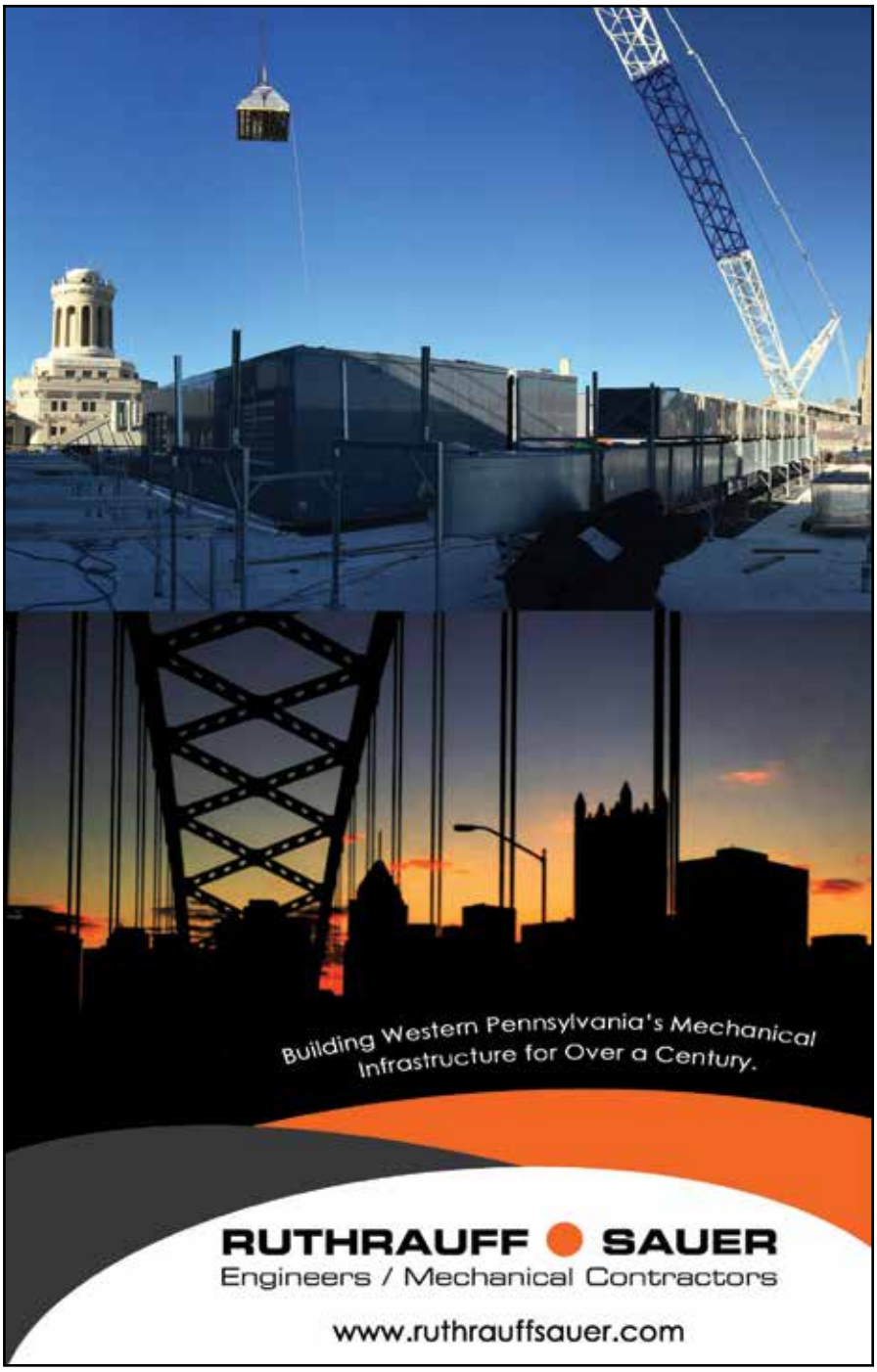
"Every time they did make an actual penetration, the hazardous materials contractor had to come back on site and that had to be worked into the sequencing of a very fast-paced construction schedule. That's not normal," Harris explains. "Usually the hazardous materials contractor is involved in the first two or three weeks of the project. Everyone involved, including the hazardous materials contractor, understood what was going on and did not make a big deal out of it. They just did what they had to do."

"It was definitely nerve wracking when we discovered those conditions," agrees Palmiere. "Carlow had a good asbestos abatement contractor on the site and we were all working together so that things went smoothly."

The relatively small footprint of Curran Hall made designing the expanded space more difficult. The 12,500 square foot floor plates were supported by tightly-spaced columns, making it a challenge to allow enough space for the nurses to have 270-degree access to the beds while keeping sight lines free for the instructors who would be in the room. The compact space dictated that there wouldn't be space wasted on corridors, so there was extra thought given to the flow between the rooms. Harris says that the space demanded the layout be efficient and forced Carlow to think carefully about what would and would not be necessary to incorporate into the simulation space.

FSS's team completed the classrooms in time for the start of the fall semester and moved into the simulation labs to wrap those spaces up as planned. By mid-September, when the nursing students were prepared to begin simulations, the new labs in Curran Hall were ready.

"The finished product was tremendously well received by the students, the faculty, and our board of trustees," says Meadows.



"We have been able to accommodate a significantly higher number of nursing and respiratory care students because of the new space. We have actually had other universities in the region that are looking to revamp and re-engineer their simulation and high-fidelity space come to our labs. That's been very good publicity for the Health and Wellness school. We couldn't be more pleased with the work that FSS did. They were a great partner throughout the project."

"Everybody at Carlow, the architect, and all of our subcontractors worked together. They bought into and understood the timeframe we had to work with," says Palmiere. "Everybody was accommodating to help us get the job done the right way and in the time we needed to."

"I don't normally do this but after the project was over, I wrote a letter to the president of FSS telling him how much I enjoyed working with his crew on the project. The relationship was that workable," says Harris. "Everybody involved had the right frame of mind for collaboration. In a project with a tight schedule, everybody must work together to make decisions that are for the good of the project. That's awesome because it's not always like that." BG

PROJECT TEAM

Facility Support Services, LLC	General Contractor
Carlow University	Owner
IKM Inc.	Architect
McKim & Creed	Mechanical/Electrical Engineer
Neumeyer Environmental Services	Asbestos Abatement
Right Electric Inc.	Electrical
Thomarios	Painting
Massaro Industries	Ceramic Tile
Ruthrauff Sauer LLC	HVAC
W.G. Tomko Inc.	Plumbing
River City Glass Inc.	Glass/Glazing
Caldwell's Windoware	Window Treatments
Tri-State Flooring, Inc	Vinyl Tile/Carpeting
Graphics 22	Signage
Wyatt Incorporated	Interiors

FSS was selected to provide the installation of a new metal screen wall system on three sides of the fifth floor of the Student Commons Building. The tempered glass and perforated metal panel system replaced the existing handrail systems, ensuring safety of both students and faculty.

The architectural panels were designed by six students at Carlow University. The architect, LGA Partners, refined that design to ensure that the panels could easily be produced and to allow for the proper amount of light and air to pass through each of the panels. The triptych (a series of three interrelated panels) consisted of three main themes illustrated throughout the terrace: Community & Nature, Academics and History.

Explored across 13 triptychs, as well as corner and gap panels, the designs illustrate the Sisters of Mercy's immigration from Ireland to Pittsburgh. The sweeping landscapes embody Carlow's core value of discovery, including a set of panels representing graduation and the values forever instilled in every student's heart.

"Safety and aesthetics were the big challenges. The university asked the students to get involved and come up with an aesthetic that was meaningful to Carlow University," says Justin Yokaites, project manager for FSS. "Safety was a big issue for us. We had to take down the existing handrail and do structural work in the ceiling above after the handrail was removed. The logistics were difficult too. We worked during the summer but the school still does have classes, so we had to work to keep the students out of the beautiful patio there."

Construction took place during the summer break of 2019, wrapping up in August ahead of fall semester classes.